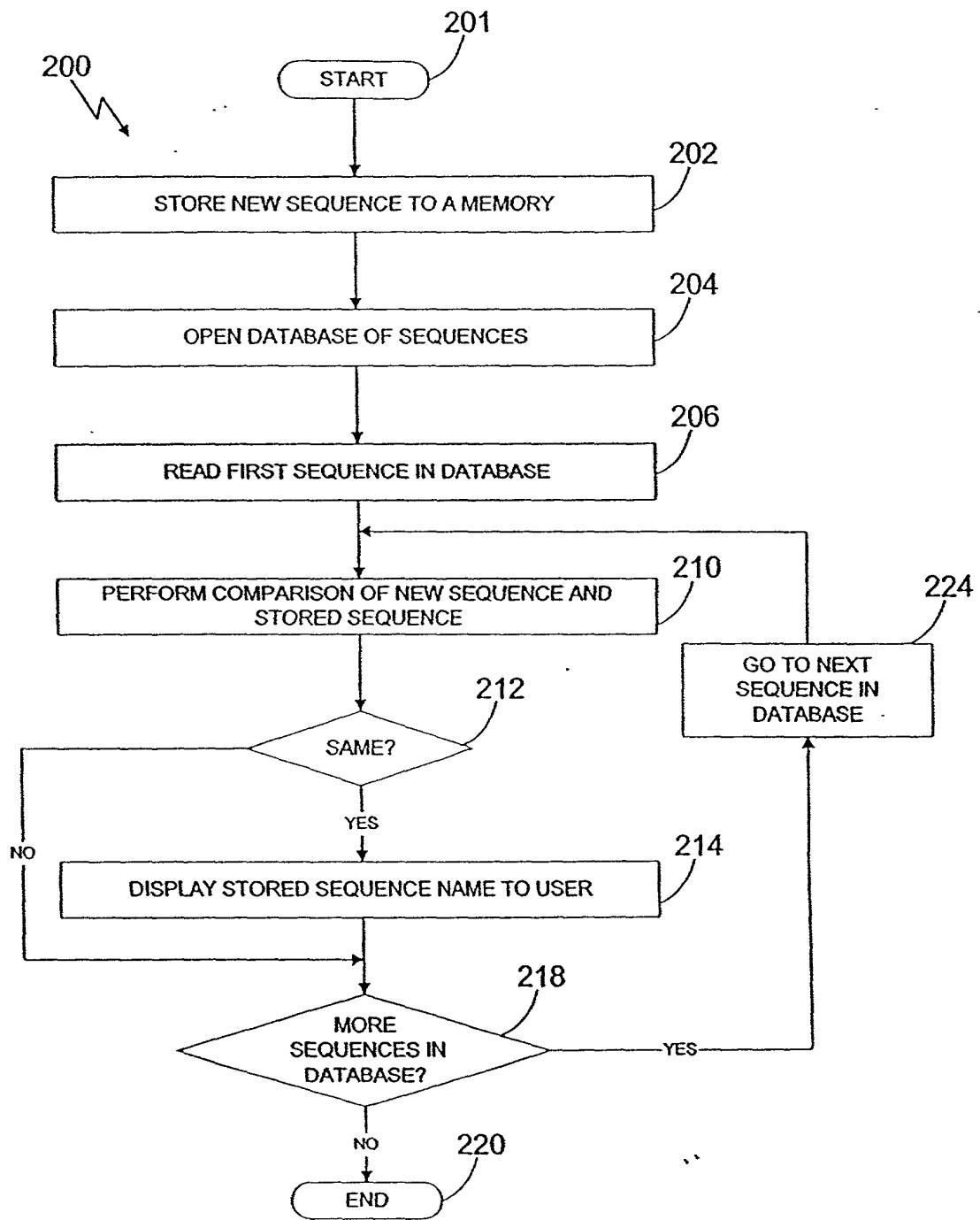
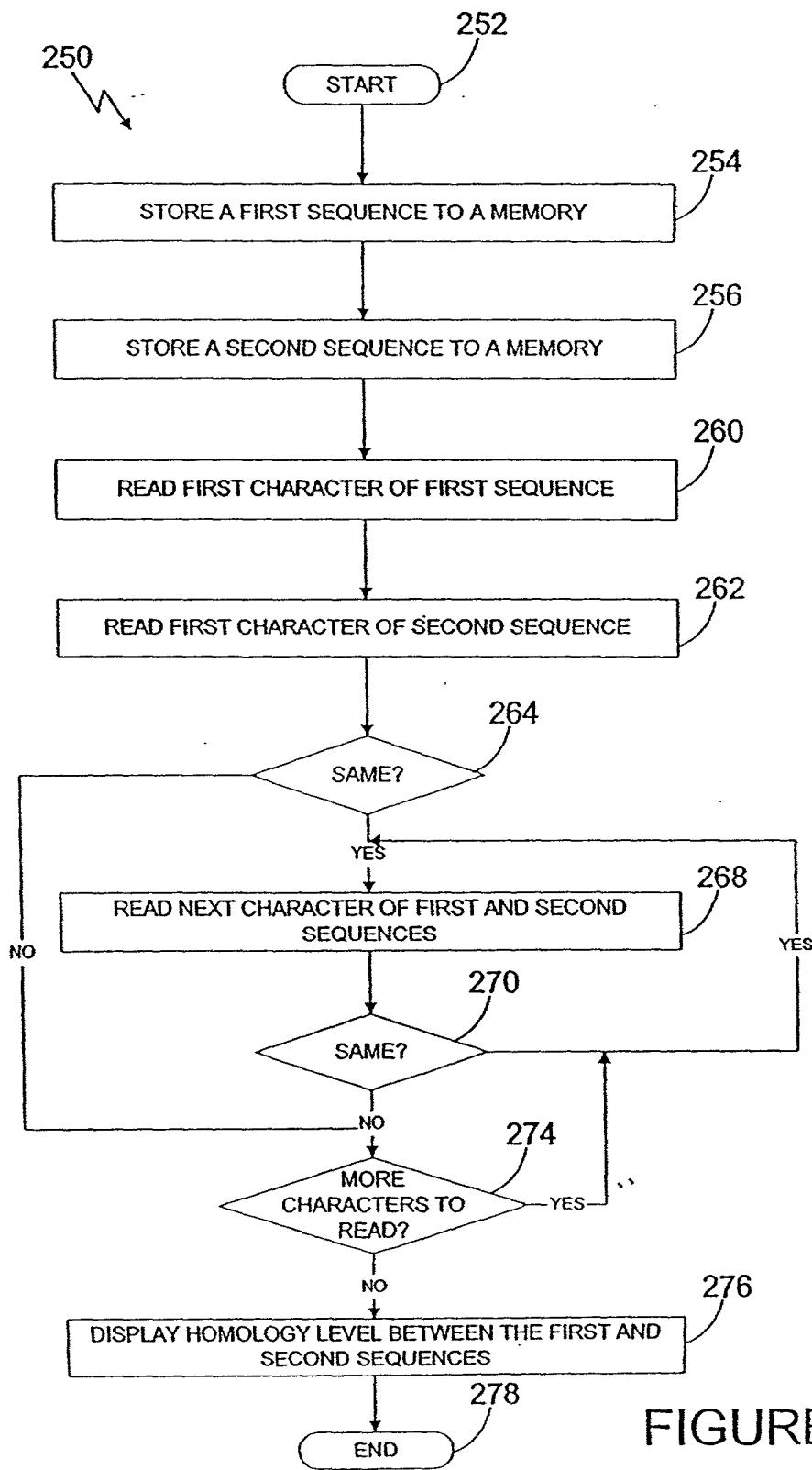


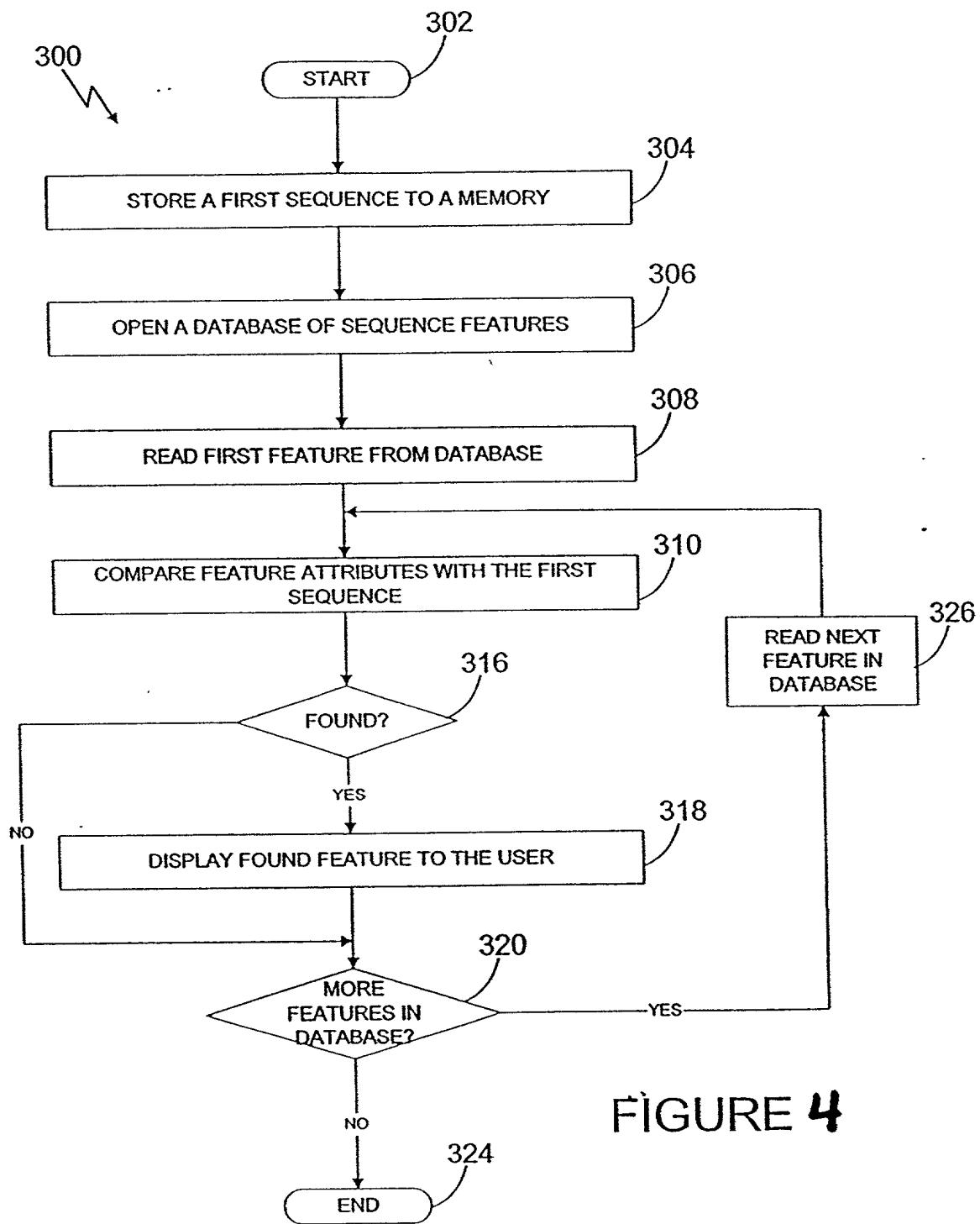
FIGURE 1



**FIGURE 2**



**FIGURE 3**



**FIGURE 4**

# FIGURE 5

## *Ammonifex degensii* KC4 Phosphatase (3A1A=3A2A) Complete gene sequence

ATGAGGGGGAGCGGAGTGC GGATACTTCTCACCAACGATGACGGCATCTTGCCGAGGGT  
1 MetArgGlySerGlyValArgIleLeuLeuThrAsnAspAspGlyIlePheAlaGluGly  
  
CTGGGGCTCTGC GCAAGATGCTGGAGCCC GTGGCTACCCTTACGTGGTGGCTCCGGAC  
21 LeuGlyAlaLeuArgLysMetLeuGluProValAlaThrLeuTyrValValAlaProAsp  
  
CGAGAGCGTAGCGCGGCCAGCCATGCTATCACCGTTACCGCCCTGCGGGTGC GGGAG  
41 ArgGluArgSerAlaAlaSerHisAlaIleThrValHisArgProLeuArgValArgGlu  
  
GCGGGTTTCGCAGCCCCAGGCTTAAAGGCTGGGTAGTGGACGGTACCCCGCCGACTGC  
61 AlaGlyPheArgSerProArgLeuLysGlyTrpValValAspGlyThrProAlaAspCys  
  
GTCAAGCTGGGCCTGGAGGTACTTTGCCCGAACGTCCAGATT CCTGGTTTCGGGCATA  
81 ValLysLeuGlyLeuGluValLeuLeuProGluArgProAspPheLeuValSerGlyIle  
  
AACTACGGGCCAACCTGGGTACCGACGTACTTACTCCGGCACCGTCTGGCGGCCATA  
101 AsnTyrGlyProAsnLeuGlyThrAspValLeuTyrSerGlyThrValSerAlaAlaIle  
  
GAAGGGTAATT AACGGCATTCCCTCGGTGGCCGTATCTTGCCACGCCGGAGCCG  
121 GluGlyValIleAsnGlyIleProSerValAlaValSerLeuAlaThrArgArgGluPro  
  
GACTATA CCTGGCGGCCCGGTCGTCTGGCCTGCTGGAGGA ACTGCGAAA ACACCAA  
141 AspTyrThrTrpAlaAlaArgPheValLeuValLeuLeuGluGluLeuArgLysHisGln  
  
CTGCC CAGGAACCTGCTAACGTCAACGTGCCGACGGGTGCCCGCGGGTCAAG  
161 LeuProProGlyThrLeuLeuAsnValAsnValProAspGlyValProArgGlyValLys  
  
GTGACCAA ACTGGGAAGCGTACGCTACGTCAACGTGGTAGACTGCCGCACCGACCCCTCGG  
181 ValThrLysLeuGlySerValArgTyrValAsnValValAspCysArgThrAspProArg  
  
GGGAAGGCTTACTACTGGATGGCGGGAGAACCATGGAGCTGGACGGCAACGACTCCGAA  
201 GlyLysAlaTyrTyrTrpMetAlaGlyGluProLeuGluLeuAspGlyAsnAspSerGlu  
  
ACCGACGTCTGGCGGTGCGAGAACGGCTATATTCCGTAACACCGTCCAGATCGACCTT  
221 ThrAspValTrpAlaValArgGluGlyTyrIleSerValThrProValGlnIleAspLeu  
  
ACTAACTACGGCTTCTGGAAAGAACTCAAAAATGGCGTTCAAGGATATCTTTCTTCT  
241 ThrAsnTyrGlyPheLeuGluGluLeuLysLysTrpArgPheLysAspIlePheSerSer  
  
TAA  
261 End 261

# FIGURE 6

## *Methanococcus igneus* Ko15 Phosphatase (9A1A) Complete Gene Sequence

ATGTTGGATATACTGCTTGTAAATGATGATGCCATTATTCAAATGGATTAATAGCTTG  
1 MetLeuAspIleLeuLeuValAsnAspAspGlyIleTyrSerAsnGlyLeuIleAlaLeu  
  
AAGGATGCATTATTGGAAAAATTAAATGCGAGGATTACTATTGTAGCCCCAACAAATCAG  
21 LysAspAlaLeuLeuGluLysPheAsnAlaArgIleThrIleValAlaProThrAsnGln  
  
CAGAGTGGTATTGGTAGGGCAATAAGTTATTGAGCCGTTAAGGATAACTAAAACAAA  
41 GlnSerGlyIleGlyArgAlaIleSerLeuPheGluProLeuArgIleThrLysThrLys  
  
TTAGCAGATGGTTCTGGGGATATGCAGTTTCAGGAACCCCAACAGATTGCGTTATATTG  
61 LeuAlaAspGlySerTrpGlyTyrAlaValSerGlyThrProThrAspCysValIleLeu  
  
GGCATTATGAGATATTAAAGAAGGTACCTGATGTAGTTATATCAGGAATAAACATTGGA  
81 GlyIleTyrGluIleLeuLysValProAspValValIleSerGlyIleAsnIleGly  
  
GAAAACCTTGGGACTGAAATAACAACCTCTGGAACGTTGGGGCTGCGTTGAAGGGGCC  
101 GluAsnLeuGlyThrGluIleThrSerGlyThrLeuGlyAlaAlaPheGluGlyAla  
  
CATCATGGGCTAACGGCATTAGCATCATCACTCCAAGTTACCTCTGACCCTAAAGTTT  
121 HisHisGlyAlaLysAlaLeuAlaSerSerLeuGlnValThrSerAspHisLeuLysPhe  
  
AAAGAGGGGGAGACCCCAATAGACTTCACAGTCCCAGCAAGAATTACTGCAAATGTTGTT  
141 LysGluGlyGluThrProIleAspPheThrValProAlaArgIleThrAlaAsnValVal  
  
GAGAAGATGTTGGATTATGATTCCCATGATGTCGTCAACTTAAACATTCCAGAAGGA  
161 GluLysMetLeuAspTyrAspPheProCysAspValValAsnLeuAsnIleProGluGly  
  
GCAACAGAAAAGACACCGATTGAAATCACAAAGGTTGGCAAGGAAAATGTATACAACACAC  
181 AlaThrGluLysThrProIleGluIleThrArgLeuAlaArgLysMetTyrThrHis  
  
GTTGAGGAAAGAATAGATCCAAGAGGGAGGAGTTATTATTGGATTGATGGGTATCCTATT  
201 ValGluGluArgIleAspProArgGlyArgSerTyrTyrTrpIleAspGlyTyrProIle  
  
TTAGAGGAAGAGGAAGACACTGATGTCTATGTTAGAAGAAAGGGACATATTCTCTA  
221 LeuGluGluGluAspThrAspValTyrValValArgArgLysGlyHisIleSerLeu  
  
ACCCCATTAACATTAGACACAACAATTAAAAATTAGAGGAATTAAAGAAAAATATGAG  
241 ThrProLeuThrLeuAspThrThrIleLysAsnLeuGluGluPheLysLysTyrGlu  
  
AGAATATTAAATGAATGA  
261 ArgIleLeuAsnGluEnd 266

# FIGURE 7

## *Thermococcus alcaliphilus AEDII12RA Phosphatase (18A)* Complete Gene Sequence

ATGATGATGGAATTCACTCGCGAGGGAAATAAAGCTGCTGTAGAGGCACTTCAAGGGTTA  
1 MetMetMetGluPheThrArgGluGlyIleLysAlaAlaValGluAlaLeuGlnGlyLeu  
  
GGAGAGAGATCTACGTAGTTGCCCAATGTTCAAAGGAGCGCAAGTGGAAAGGGCAATGACC  
21 GlyGluIleTyrValValAlaProMetPheGlnArgSerAlaSerGlyArgAlaMetThr  
  
ATCCACAGACCTCTAACGGCTAAAAGAATAAGTATGAACGGTGCAAAAGCAGCCTATGCT  
41 IleHisArgProLeuArgAlaLysArgIleSerMetAsnGlyAlaLysAlaAlaTyrAla  
  
TTGGATGGAATGCCGTTGATTGCGTTATCTTGCATGCCAGATTGGAGATTTCGAC  
61 LeuAspGlyMetProValAspCysValIlePheAlaMetAlaArgPheGlyAspPheAsp  
  
CTTGCAATAAGTGGTGTAAACTTGGGAGAAAACATGAGCACCGAGATAACGGTTCCGGG  
81 LeuAlaIleSerGlyValAsnLeuGlyGluAsnMetSerThrGluIleThrValSerGly  
  
ACTGCAAGCGCTGCAATAGAGGCTGCAACCCAAGAGATCCAAGCATTCCCATAAGCCTG  
101 ThrAlaSerAlaAlaIleGluAlaAlaThrGlnGluIleProSerIleProIleSerLeu  
  
GAAGTTAATAGAGAAAAACACAAATTGGTGAGGGCGAAGAGATTGACTTCTCAGCTGCC  
121 GluValAsnArgGluLysHisLysPheGlyGluGlyGluIleAspPheSerAlaAla  
  
AACTTCCATAAGAAAAATCGCAACGGCGTTAAAGAGAGGCCCTCCCAAAGGAGTC  
141 LysTyrPheLeuArgLysIleAlaThrAlaValLeuLysArgGlyLeuProLysGlyVal  
  
GATATGCTGAACGTCAACGTCCCTPATGATGCAAATGAAAGGACAGAGATAGCTTTACT  
161 AspMetLeuAsnValAsnValProTyrAspAlaAsnGluArgThrGluIleAlaPheThr  
  
CGCCTGGCAAGAAGGATGTATAGGCCTTCTATTGAAGAGGCCATAGACCCAAGGGAAAT  
181 ArgLeuAlaArgArgMetTyrArgProSerIleGluGluArgIleAspProLysGlyAsn  
  
CCCTACTACTGGATAGTTGGAACTCAGTGCCTAACGGAGGCATTAGGCCGGAACGGAT  
201 ProTyrTyrTrpIleValGlyThrGlnCysProLysGluAlaLeuGluProGlyThrAsp  
  
ATGTATGTAGTTAAAGTTGAGAGAAAAGTTAGCGTGACTCCAATAAACATTGATATGACA  
221 MetTyrValValLysValGluArgLysValSerValThrProIleAsnIleAspMetThr  
  
GCAAGAGTGAATTAGACGAGATTAAAAGACTTTAGAACTGTAG  
241 AlaArgValAsnLeuAspGluIleLysArgLeuLeuGluLeuEnd 255

## FIGURE 8

*Thermococcus celer* Phosphatase (25A1A)  
Complete Gene Sequence

	ATGAGAACCTGACAATAACACTGACGCCGGAGGGGTCGTTTGAGGATTCTCTGACG	
1	MetArgThrLeuThrIleAsnThrAspAlaGluGlyPheValLeuArgIleLeuLeuThr	20
21	AACGACGATGGAATCTACTCCAACGGACTGCCGCCGCTGTGAAAGCCTGAGTGAGCTC AsnAspAspGlyIleTyrSerAsnGlyLeuArgAlaAlaValLysAlaLeuSerGluLeu	40
41	GGCGAAGTTACGTCGTTGCCCTCTTCCAGAGGAGCGCGAGCGGCAGGGCATGACG GlyGluValTyrValValAlaProLeuPheGlnArgSerAlaSerGlyArgAlaMetThr	60
61	CTCCACAGGCCATAAGGCCAAGCGCGTTGACGTTCCCGCGCAAAGATAGCCTACGGA LeuHisArgProIleArgAlaLysArgValAspValProGlyAlaLysIleAlaTyrGly	80
81	ATAGATGGAACCTACTGACTGCGTGATTTGCCATAGCCCGCTTCGGGAGCTTGGT IleAspGlyThrProThrAspCysValIlePheAlaIleAlaArgPheGlySerPheGly	100
101	TTAGCCGTGAGCGGGATTAAACCTCGCGAGAACCTGAGCACCGAGATAACAGTCTCAGGG LeuAlaValSerGlyIleAsnLeuGlyGluAsnLeuSerThrGluIleThrValSerGly	120
121	ACGGCCTCCGCTGCCATAGAGGCCTCAACTCATGGAATTCCGAGCATAGCGATTAGCCTT ThrAlaSerAlaAlaIleGluAlaSerThrHisGlyIleProSerIleAlaIleSerLeu	140
141	GAGGTGGAGTGGAAAGAACCCCTCGCGAGGGTGAGGGGGTTGACTTCTCGGTCTCGACT GluValGluTrpLysLysThrLeuGlyGluGlyValAspPheSerValSerThr	160
161	CACTCCTCAAGAGAACCGCTCGGGAGCCCTCTGAGAGAGGTCTCCTGAGGGCGTTGAC HisPheLeuLysArgIleAlaGlyAlaLeuLeuGluArgGlyLeuProGluGlyValAsp	180
181	ATGCTAACGTCAACGTTCCGAGCGACGCCGACGGAGGAAACGGAGATAGCAATACCCGC MetLeuAsnValAsnValProSerAspAlaThrGluGluThrGluIleAlaIleThrArg	200
201	TTAGCCCGGAAGCGCTACTCCCCAACGGTCGAGGAGAGGATTGACCCCAAGGGCAACCCC LeuAlaArgLysArgTyrSerProThrValGluGluArgIleAspProLysGlyAsnPro	220
221	TACTACTGGATTGTCGGCAAACCTGTCCAAGACTTCGAGCCAGGGACAGATGCCTACGCC TyrTyrTrpIleValGlyLysLeuValGlnAspPheGluProGlyThrAspAlaTyrAla	240
241	CTGAAGGTCGAGAGGAAGGTCAAGCGTCACGCCGATAAACATAGATATGACTGCGAGGGTG LeuLysValGluArgLysValSerValThrProIleAsnIleAspMetThrAlaArgVal	260
261	GACTTTGAGGAGCTTGTAAAGGGTTCTGTGGGTGTAA AspPheGluGluLeuValArgValLeuTrpValEnd	272

# FIGURE 9A

*Thermococcus GU5L5 Phosphatase (26A1A)*  
Complete Gene Sequence (Part 1 of 2)

1	ATGAAAGGAAAGTCTCTTGTAGCGGTCTGGTGGTCTTTAATTTGAGCCTGATT MetLysGlyLysSerLeuValSerGlyLeuLeuLeuGlyLeuLeuIleLeuSerLeuIle	20
21	TCATTCAGCCAAGCTTTGCATACTCCCCACACGGCGGTGTCAAAAACATCATAATCCTG SerPheGlnProSerPheAlaTyrSerProHisGlyGlyValLysAsnIleIleIleLeu	40
41	GTTGGAGACGGCATGGGTCTGGGCATGTAGAAATTACAAAGCTCGTTATGGACACTTA ValGlyAspGlyMetGlyLeuGlyHisValGluIleThrLysLeuValTyrGlyHisLeu	60
61	AACATGGAAAACTTCCAGTTACTGGATTGAGCTTACTGATTCCCTAACGTGGTGAAGTT AsnMetGluAsnPheProValThrGlyPheGluLeuThrAspSerLeuSerGlyGluVal	80
81	ACAGATTCTGCTGGCAGGAACGTGCAATATCCACTGGAGCTAAAACGTATAATGGTATG ThrAspSerAlaAlaAlaGlyThrAlaIleSerThrGlyAlaLysThrTyrAsnGlyMet	100
101	ATTTCACTAACATAACCCGAAAGATAGTTAACTTAACAACCCTACTTGAAGTGGCT IleSerValThrAsnIleThrGlyLysIleValAsnLeuThrThrLeuLeuGluValAla	120
121	CAAGAGCTTGGGAAGTCAACAGGGCTGGTCACCACAAAGGATTACCCATGCAACTCCA GlnGluLeuGlyLysSerThrGlyLeuValThrThrArgIleThrHisAlaThrPro	140
141	GCAGTTTGCGTCCCAGTCCCAGATAGGGATATGGAGGGGAGATACCCAAAGCAAAC AlaValPheAlaSerHisValProAspArgAspMetGluGlyGluIleProLysGlnLeu	160
161	ATAATGCACAAAGTTAACGTCTTGTGGTGGAGGGAGAAATTGATGAGAAAAAT IleMetHisLysValAsnValLeuLeuGlyGlyArgGluLysPheAspGluLysAsn	180
181	TTGGAGCTGCCAAAAACCGGGATACAAAGTAGTTTCACGAAGGAAGAGCTTGAAAAA LeuGluLeuAlaLysLysGlnGlyTyrLysValValPheThrLysGluLeuGluLys	200
201	GTTGAAGGAGATTATGTCCTAGGACTCTTGCAGAAAGTCACATCCCTACGTATTGGAT ValGluGlyAspTyrValLeuGlyLeuPheAlaGluSerHisIleProTyrValLeuAsp	220
221	AGAAAACCCGATGATGTTGGACTTTAGAAATGCCAAAAAGGCAATTCAATACTCGAG ArgLysProAspAspValGlyLeuLeuMetAlaLysLysAlaIleSerIleLeuGlu	240
241	AAGAACCCGAGGGATTCTTCTCATGGTTGAGGGCGGAAGGATTGACCATGCAGCCCAT LysAsnProSerGlyPhePheLeuMetValGluGlyGlyArgIleAspHisAlaAlaHis	260
261	GGAAACGATGTCGCATCGGTTGTCAGAAACTAAGGAGTTGACGATGTTGTCAGATAC GlyAsnAspValAlaSerValValAlaGluThrLysGluPheAspAspValValArgTyr	280
281	GTGCTGGAATATCCGAAAGAGGGGAGATACCTTGGTAATAGTGCCTGCCGATCACGAA ValLeuGluTyrProLysLysArgGlyAspThrLeuValIleValLeuAlaAspHisGlu	300
301	ACTGGAGGTCTTGCACATAGCTAACGTATGGAAATGCAATCGATGAAGATGCCATAAGA ThrGlyGlyLeuAlaIleGlyLeuThrTyrGlyAsnAlaIleAspGluAspAlaIleArg	320
321	AAAATAAAAGCAACGACCGMTGAGGATGCCAAAGAGGTTAAGGCAGGGAGTACTGTAAAA LysIleLysAlaSerThrLeuArgMetProLysGluValLysAlaGlySerSerValLys	340

# FIGURE 9b

## *Thermococcus GU5L5 Phosphatase (26A1A)* Complete Gene Sequence (Part 2 of 2)

341	GAGTCCTCAAAGGTATGCCGGATTTGTCACAGAGGAAGAACAGTCAGTATATTGAGAAT GluSerSerLysValCysArgIleCysProAsnArgGlyArgSerGlnTyrIleGluAsn	360
361	GCGCTGCACTCGACAAACAAGTATGCCCTCTCAAATGCAGTAGCCGATGTTATAAACAGG AlaLeuHisSerThrAsnLysTyrAlaLeuSerAsnAlaValAlaAspValIleAsnArg	380
381	CGTATTGGTGGATTCACCTCCTATGAGCATACAGGAGTTCCAGTTCCGCTCTTAGCT ArgIleGlyValGlyPheThrSerTyrGluHisThrGlyValProValProLeuLeuAla	400
401	TACGGTCCCAGGGCAGAGAACTTCAGAGGTTCTTACACCATGTGGATACAGCAAGATTA TyrGlyProGlyAlaGluAsnPheArgGlyPheLeuHisHisValAspThrAlaArgLeu	420
421	GTTGCAAAGTTAATGCTCTTGAAGGAGGAATATTCCAGTTACCACTTCAAGCGTGAGC ValAlaLysLeuMetLeuPheGlyArgArgAsnIleProValThrIleSerSerValSer	440
441	AGTGTAAAGGGAGACATAACCGGTGATTACAGGGTTGATGAGAAGGGATGCCCTACGTTACG SerValLysGlyAspIleThrGlyAspTyrArgValAspGluLysAspAlaTyrValThr	460
461	CTCATGATGTTCTCGGAGAAAAAGTGGATAATGAAATTGAAAAGAGAGTCGATATAGAC LeuMetMetPheLeuGlyGluLysValAspAsnGluIleGluLysArgValAspIleAsp	480
481	AACAAACGGCATGGTTGACTTAAATGACGTCATGTTGATTCTCCAGGAAGCTTGA AsnAsnGlyMetValAspLeuAsnAspValMetLeuIleLeuGlnGluAlaEnd	498

# FIGURE 10A

**OC9a Phosphatase (27A3A)**  
**Complete Gene Sequence (Part 1 of 2)**

1	ATGCCAAGAAATATGCCGCTGTATGCCGCCTGGCCGCTTGTAGGGTCGGCTGGCG	20
21	MetProArgAsnIleAlaAlaValCysAlaLeuAlaAlaLeuLeuGlySerAlaTrpAla AlaLysValAlaValTyrProTyrAspGlyAlaAlaLeuLeuAlaGlyGlnArgPheAsp	40
41	GCCAAAGTTGCCGTCTACCCCTACGACGGAGCCGCTTGCTGGCGGGCAGCGCTTCGAT TTGCGCATAGAACGCTCCGAGCTGAAAGGCAATTAAAGGCTTACCGCATCACCCCTGGAC LeuArgIleGluAlaSerGluLeuLysGlyAsnLeuLysAlaTyrArgIleThrLeuAsp	60
61	GGCCAGCCTCTGGCGGGCTCGAGCAAACCGCGCAGGGGGCCGGGAGGCCGAGTGGACC GlyGlnProLeuAlaGlyLeuGluGlnThrAlaGlnGlyAlaGlyGlnAlaGluTrpThr	80
81	CTGCGCGGTGCCTCTGCGCCCTGGAAGCCACACCCCTCGAGGTCAAGCTCACCGACGAC LeuArgGlyAlaPheLeuArgProGlySerHisThrLeuGluValSerLeuThrAspAsp	100
101	GCTGGGGAGAGCAGGAAGAGCGTACGTTGGGAGGCTCGGCAGAACCTCGCTTGCCCCGA AlaGlyGluSerArgLysSerValArgTrpGluAlaArgGlnAsnLeuArgLeuProArg	120
121	GCGGCCAAGAATGTGATTCTCTTCAATTGGCGACGGATGGCTGGAACACCCCTAACGCC AlaAlaLysAsnValIleLeuPheIleGlyAspGlyMetGlyTrpAsnThrLeuAsnAla	140
141	GCCCCGCATCATGCCAAGGCTTAACCCGAAAACGGTATGCCAACGGAAACCTCGAG AlaArgIleIleAlaLysGlyPheAsnProGluAsnGlyMetProAsnGlyAsnLeuGlu	160
161	ATCGAGAGTGGTTACGGTGGATGGCTACCGTCACTACCGGCAGCTTGATAGCTTCATC IleGluSerGlyTyrGlyGlyMetAlaThrValThrThrGlySerPheAspSerPheIle	180
181	GCCGACTCAGCTAACTCGGTTCTTCCATCATGACCGGGCAGAAGGTGCAGGTGAATGCC AlaAspSerAlaAsnSerAlaSerSerIleMetThrGlyGlnLysValGlnValAsnAla	200
201	CTCAACGTTTACCCATCAAACCTCAAAGATAACCCCTGGCCTACCCCGGATCGAAACCTTA LeuAsnValTyrProSerAsnLeuLysAspThrLeuAlaTyrProArgIleGluThrLeu	220
221	GCGGAGATGCTCAAGCGGGTACGGGGGCCAGCATGGGGTAGTGACCAACCACCTCGGC AlaGluMetLeuLysArgValArgGlyAlaSerIleGlyValValThrThrPheGly	240
241	ACCGACGCTACCCCGGTTCACTCAACGCCATACCCGCCGCCGCGGTGATTACCAAGGCT ThrAspAlaThrProAlaSerLeuAsnAlaHisThrArgArgArgGlyAspTyrGlnAla	260
261	ATCGCCGACATGTACTTGGTAGAGGGGGTCGGTGTCCCTGGATGTGATGCTCTTC IleAlaAspMetTyrPheGlyArgGlyGlyPheGlyValProLeuAspValMetLeuPhe	280
281	GGTGGTTCACGCGACTTCATCCCCAGAGCACCCCTGGCTCGCGGCCAGGGATAGCAGG GlyGlySerArgAspPheIleProGlnSerThrProGlySerArgArgLysAspSerThr	300
301	GACTGGATTGCCGAATCCCAGAACGCTGGCTACACCTTGTCAAGCACCCGCCAGCGAGCTG AspTrpIleAlaGluSerGlnLysLeuGlyTyrThrPheValSerThrArgSerGluLeu	320
321	CTGGCGGCAAACCCACCGATAACCTGTTGGCTGTTCAACATTGACAACCTCCCCAGC LeuAlaAlaLysProThrAspLysLeuPheGlyLeuPheAsnIleAspAsnPheProSer	340

# FIGURE 10B

**OC9a Phosphatase (27A3A)**  
**Complete Gene Sequence (Part 2 of 2)**

341	TACCTAGACCGCCAGTGTGGAAGCGGCCGAGATGCTGGGAAGCTTTACCGATATGCC	360
	TyrLeuAspArgAlaValTrpLysArgProGluMetLeuGlySerPheThrAspMetPro	
361	TACCTCTGGGAGATGACCCAGAAAGCCGTGGAGGCTCTCTCCAGAAACGACAAAGGCTTT	380
	TyrLeuTrpGluMetThrGlnLysAlaValGluAlaLeuSerArgAsnAspLysGlyPhe	
381	TTCTTGATGGTTGAGGGGGAAATGGTGGATAAGTACGAGCACCCCTGGACTGGCCCCGC	400
	PheLeuMetValGluGlyGlyMetValAspLysTyrGluHisProLeuAspTrpProArg	
401	GCACTTTGGGATGTACTCGAGCTGGACC CGCGGTGGCTGGCCAAGGGCTATGCGGCC	420
	AlaLeuTrpAspValLeuGluLeuAspArgAlaValAlaTrpAlaLysGlyTyrAlaAla	
421	TCCCACCCCGATACCCCTGGTGATTGTCACCGCCGACCACGCTCACTCGATCTCGGTGTTT	440
	SerHisProAspThrLeuValIleValThrAlaAspHisAlaHisSerIleSerValPhe	
441	GGCGGGTTACGACTACTCCAAGCAGGGCCGGAGGGGGTGGGGGTTATGAGGCCGCAAG	460
	GlyGlyTyrAspTyrSerLysGlnGlyArgGluGlyValGlyValTyrGluAlaAlaLys	
461	TTCCCCACCTACGGCGACAAAAAGACGCCAACGGCTTTCCTTGCCCCGACACCACTCGG	480
	PheProThrTyrGlyAspLysAspAlaAsnGlyPheProLeuProAspThrThrArg	
481	GGAATCGCGGTAGGCTTCGGGCCACGCCGATTACTGTGAAACCTACCGGGCCGCGAG	500
	GlyIleAlaValGlyPheGlyAlaThrProAspTyrCysGluThrTyrArgGlyArgGlu	
501	GTCTACAAAGACCCACCATCTCGACGGCAAAGGTGGTTACGTGGCCAACCCCTGAGGTC	520
	ValTyrLysAspProThrIleSerAspGlyLysGlyTyrValAlaAsnProGluVal	
521	TGCAAGGAGCCGGGCCCTCCAACGTAACGGCAACTCCCAGTAGATAGCGCCCAGGGCGTG	540
	CysLysGluProGlyLeuProThrTyrArgGlnLeuProValAspSerAlaGlnGlyVal	
541	CACACGGCTGATCCCATGCCGCTGTTGCCTTGGCGTGGGTCTCAGTTCTCAATGGC	560
	HisThrAlaAspProMetProLeuPheAlaPheGlyValGlySerGlnPhePheAsnGly	
561	CTCATCGACCAGACCGAGATCTTCCGCATGGCCAGGCCCTAGGGTTCAACCCCCAC	580
	LeuIleAspGlnThrGluIlePhePheArgMetAlaGlnAlaLeuGlyPheAsnProHis	
581	CTCGAGAAGCCTTAA LeuGluLysProEnd 585	

# FIGURE //

**M11 TL Phosphatase (29A1A=29A2A)**  
**Complete Gene Sequence**

1	ATGTATAAATGGATTATTGAGGGTAAGCTGCCAACCTTTCCAAGCCTAGGTGAA MetTyrLysTrpIleIleGluGlyLysLeuAlaGlnAlaProPheProSerLeuGlyGlu	20
21	CTAGCCGATCTCAAAAGACTTTCGACGCCATTATTGTTCTTACAATGCCGCATGAACAA LeuAlaAspLeuLysArgLeuPheAspAlaIleIleValLeuThrMetProHisGlnGln	40
41	CCGCTTAATGAGAAATATATCGAGATATTAGAGAGCCATGGATTCCAAGTCCTCCATGTC ProLeuAsnGluLysTyrIleGluIleLeuGluSerHisGlyPheGlnValLeuHisVal	60
61	CCCACGCTCGACTTCATCCTTAGAACTCTCGACCTTTGAAAACAAGCATATTCAATT ProThrLeuAspPheHisProLeuGluLeuPheAspLeuLeuLysThrSerIlePheIle	80
81	GATAAAAACCTGGAGAGATCCCACAGACTGCTTGCTTCACTGCATGGAGGCATAGGCCGG AspGluAsnLeuGluArgSerHisArgValLeuValHisCysMetGlyGlyIleGlyArg	100
101	AGCGGGCTTGTAACTGCTGCGTACTTAATATTCAAAGTTATGATATTACGACGCCGTA SerGlyLeuValThrAlaAlaTyrLeuIlePheLysGlyTyrAspIleTyrAspAlaVal	120
121	AAGCATGTGAGAACGGTAGTGCTGGTCTATTGAAAACAGAGGGCAAGCGTTAATGCTT LysHisValArgThrValValProGlyAlaIleGluAsnArgGlyGlnAlaLeuMetLeu	140
141	GAGAACTACTATACCCTGGTAAAAGTTCAACAGAGAGTTGCTGAGAGACTACGGGAAG GluAsnTyrTyrThrLeuValLysSerPheAsnArgGluLeuLeuArgAspTyrGlyLys	160
161	AAAATTTACGCTCGGTGACCCGAAGGCCGTTCTCACGCTTCTAACGACTCAGTTC LysIlePheThrLeuGlyAspProLysAlaValLeuHisAlaSerLysThrThrGlnPhe	180
181	ACGATTGAACTCTAACGAACTTACACGTCAACGAGGGCTTTCAATCAGTGGCATGGCT ThrIleGluLeuLeuSerAsnLeuHisValAsnGluAlaPheSerIleSerAlaMetAla	200
201	CAATCACTGCTCCACTTCACGACGTAAAAGTCCGCTCTAAACTGAAAGAAGTATTGAA GlnSerLeuLeuHisPheHisAspValLysValArgSerLysLeuLysGluValPheGlu	220
221	AACATGGAATTCTCATCCGCCTCAGAGGAGGTTCTGTCATTATTACCTACTCGATTTC AsnMetGluPheSerSerAlaSerGluGluValLeuSerPheIleHisLeuLeuAspPhe	240
241	TATCAGGATGGCAGGGTTGTTTAACCATTTACGATTATCTCCCCGATAGGGTGGATTG TyrGlnAspGlyArgValValLeuThrIleTyrAspTyrLeuProAspArgValAspLeu	260
261	ATTTTATTGTGTAAGTGGGTTGTGATAAAATAGTTGAAGTCTCGTCTTCAGCGAAGAAA IleLeuLeuCysLysTrpGlyCysAspLysIleValGluValSerSerAlaLysLys	280
281	ACCGTTGAGAAGCTTGTAGGAAGAAAGGTTCCCTATCCTGGGCTAATTACTTAGACTAT ThrValGluLysLeuValGlyArgLysValSerLeuSerTrpAlaAsnTyrLeuAspTyr	300
301	GTTPAC Val End 302	

# FIGURE 12

*Thermococcus CL-2 Phosphatase (30A1A)*  
Complete Gene Sequence

	ATGAGAACCTCCTCACCAACGACGACGGCATCTATTCCAACGGTCTGCGCGCGCGGTG	
1	MetArgIleLeuLeuThrAsnAspAspGlyIleTyrSerAsnGlyLeuArgAlaAlaVal	20
	AAGGGCCTGAGCGAGCTCGCGAGGTCTACGTGTCGCCCGCTCTCCAGAGGAGCGCG	
21	LysGlyLeuSerGluLeuGlyGluValTyrValValAlaProLeuPheGlnArgSerAla	40
	AGCGGTGGCGATGACCTACACAGGCCATAAGGCCAAAGAGGGTTGACGTTCCCGGC	
41	SerGlyArgAlaMetThrLeuHisArgProIleArgAlaLysArgValAspValProGly	60
	GCGAAGATAGCGTATGGCATAGACGGAACGCCGACCGACTGCGTGATTTGCCATGCC	
61	AlaLysIleAlaTyrGlyIleAspGlyThrProThrAspCysValIlePheAlaIleAla	80
	CGCTTCGGCGACTTTGATCTGGCGGTCAAGCGGGATAAACCTAGGCGAGAACCTGAGCACG	
81	ArgPheGlyAspPheAspLeuAlaValSerGlyIleAsnLeuGlyGluAsnLeuSerThr	100
	GAGATAACCGTCTCCGAAACGGCTCGGCGGCGATAGAGGTTCCACCCACGGGATTCCA	
101	GluIleThrValSerGlyThrAlaSerAlaAlaIleGluAlaSerThrHisGlyIlePro	120
	AGTGTAGCTATAAGCCTCGAGGTCGAGTGGAAAGAACCCCTCGCGAGGGGGAGGGTATT	
121	SerValAlaIleSerLeuGluValGluTrpLysThrLeuGlyGluGlyIle	140
	GACTTCTCGGTTTCAGCACACTCCTGAGAAGGATAGCGACGGCTGTCCTTAAGAACGGC	
141	AspPheSerValSerAlaHisPheLeuArgArgIleAlaThrAlaValLeuLysLysGly	160
	CTGCCTGAAGGGTGGACATGCTAACGTGAACGTCCCTAGCGACGCCAGCGAGGGACT	
161	LeuProGluGlyValAspMetLeuAsnValAsnValProSerAspAlaSerGluGlyThr	180
	GAGATCGCCATAACCGCCTCGCGAGGAAGCGCTATTCTCCGACGATAGAGGGAGGGATA	
181	GluIleAlaIleThrArgLeuAlaArgLysArgTyrSerProThrIleGluGluArgIle	200
	GACCCCAAGGGCAACCCCTACTACTGGATCGTTGGCAGGCTCGTCCAGGAGTTCGAGCCG	
201	AspProLysGlyAsnProTyrTyrTrpIleValGlyArgLeuValGlnGluPheGluPro	220
	GGCACGGACGCCCTACGCTCTGAAAGTCGAGAGAAAGGTCAGCGTCACGCCATAAACATC	
221	GlyThrAspAlaTyrAlaLeuLysValGluArgLysValSerValThrProIleAsnIle	240
	GACATGACTGCGAGGGTTGACTTTGAGAACCTTCAAAGGCTCTGAGCCTGTGA	
241	AspMetThrAlaArgValAspPheGluAsnLeuGlnArgLeuLeuSerLeuEnd	258

# FIGURE /3

***Aquifex VF-5 Phosphatase (34A1A)***  
**Complete Gene Sequence**

1	ATGGAAAACCTAAAAAGTACCTAGAACGTTGCAAAATAGCCCGCTCGCGGTGGCAG MetGluAsnLeuLysLysTyrLeuGluValAlaLysIleAlaAlaLeuAlaGlyGlyGln	20
21	GTTCTGAAAGAAAACCTCGGAAAGGTAAAAAGGAAAACATAGAGGAAAAGGGAAAAG ValLeuLysGluAsnPheGlyLysValLysLysGluAsnIleGluGluLysGlyGluLys	40
41	GACTTTGTAAGTTACGTGGATAAAACTTCAGAGGAAAGGATAAAGGAGGTGATACTCAAG AspPheValSerTyrValAspLysThrSerGluGluArgIleLysGluValIleLeuLys	60
61	TTCTTCCCAGTCACGAGGTCGTAGGGAAAGAGATGGGTGCGGAGGGAAAGCGGAAGCGAA PhePheProAspHisGluValValGlyGluGluMetGlyAlaGluGlySerGlySerGlu	80
81	TACAGGTGGTTCATAGACCCCCCTTGACGGCACAAAGAACTACATAAACGGTTTCCCATC TyrArgTrpPheIleAspProLeuAspGlyThrLysAsnTyrIleAsnGlyPheProIle	100
101	TTTGCCGTATCAGTGGACTTGTAAAGGGAGAAGAGCCAATTGTGGGTGCCGTTACCTT PheAlaValSerValGlyLeuValLysGlyGluGluProIleValGlyAlaValTyrLeu	120
121	CCTTACTTTGACAAGCTTACTGGGGTGTAAAGGTCTCGGGCTTACGTAAACGGAAAG ProTyrPheAspLysLeuTyrTrpGlyAlaLysGlyLeuGlyAlaTyrValAsnGlyLys	140
141	AGGATAAAAGTAAAGGACAATGAGAGTTAAAGCAGCCGGAGTGGTTACGGATTTCCC ArgIleLysValLysAspAsnGluSerLeuLysHisAlaGlyValValTyrGlyPhePro	160
161	TCTAGGAGCAGGAGGGACATATCTATCTACTTGAACATATTCAAGGATGTCTTACGAA SerArgSerArgAspIleSerIleTyrLeuAsnIlePheLysAspValPheTyrGlu	180
181	GTTGGCTCTATGAGGAGACCCGGGGCTGCTGCGGTGACCTCTGCATGGTGGCGGAAGGG ValGlySerMetArgArgProGlyAlaAlaAlaValAspLeuCysMetValAlaGluGly	200
201	ATATTTGACGGGATGATGGAGTTGAAATGAAGCCGTGGACATAACCGCAGGGCTTGTA IlePheAspGlyMetMetGluPheGluMetLysProTrpAspIleThrAlaGlyLeuVal	220
221	ATACTGAAGGAAGCCGGGGCTTACACACTTGTGGAGAACCCCTCGGAGTTCCGAC IleLeuLysGluAlaGlyGlyValTyrThrLeuValGlyGluProPheGlyValSerAsp	240
241	ATAATTGCGGGCAACAAAGCCCTCCACGACTTATACCTCAGGTAGCCAAAAGTATATG IleIleAlaGlyAsnLysAlaLeuHisAspPheIleLeuGlnValAlaLysTyrMet	260
261	GAAGTGGCGGTGTGA GluValAlaValEnd 265	